

CECW-ED

Technical Letter  
No. 1110-2-553

30 May 1997

**Engineering and Design  
CONTROL STATIONS AND CONTROL SYSTEMS  
FOR NAVIGATION LOCKS AND DAMS**

**1. Purpose**

This Engineer Technical Letter (ETL) describes current usage and provides guidance for future designs of control station structures and control systems for navigation locks. The primary intent of this ETL is to require cost-efficient control stations and to encourage the use of programmable logic control systems rather than relay-based systems.

**2. Applicability**

This ETL applies to all HQUSACE elements and USACE commands having responsibilities for Civil Works projects.

**3. Background**

*a.* The primary purpose of navigation locks and dams is to provide navigable depths by damming of the waterway, thus allowing transfer of navigation vessels from one water level to another in a safe, reliable, and expeditious manner. To perform this complex operation, lock operating personnel must be provided with convenient control stations containing dependable operating control systems that can be easily operated, maintained, and modified. These operating systems also need to be designed so that they can be upgraded to incorporate advances in technology.

*b.* The Corps, in its stewardship of the inland waterway navigation system, has entered into a period where:

- More double locks are being constructed.
- New electronic technology with automated operating systems and equipment are available.
- Future advances in electronic technology will allow opportunities for incorporation of improved operating systems.
- Personnel limitations are reducing the number of lock operating and maintenance personnel so that some locks have only one operator and some shifts are not staffed.
- Increasing traffic demand for lockages may tax operating equipment due to the ever increasing frequency of operation of the equipment.
- Initial and future costs must be carefully considered for life cycle efficiency of navigation project construction, operation, maintenance, and major rehabilitation.

**ETL 1110-2-553**  
**30 May 97**

c. Therefore it is timely to review past practices and formulate guidance for future layout of lock

control stations and design of lock and dam control systems.

FOR THE COMMANDER:

2 Appendices  
APP A - Lock and Dam Control Stations  
and Control Systems  
APP B - Operation of PLC Systems

A handwritten signature in black ink, appearing to read 'S. L. Stockton', with a long horizontal flourish extending to the right.

STEVEN L. STOCKTON, P.E.  
Chief, Engineering Division  
Directorate of Civil Works